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Phospholipids are significantly different in liver biopsies from patients with cystic fibrosis compared to controls

B. Strandvik[1], B. Holmberg[1], R. Hultcrantz[2], A. Lindblad[1]
Dept of [1]Pediatrics, Göteborg University, Göteborg and Dept of [2]Internal Medicine, Karolinska Institute, Stockholm, Sweden

Patients with CF have both a high prevalence of hepatosteatosis and an abnormal essential fatty acid (EFA) metabolism with low serum concentrations of linoleic acid and high ratios of eicosatrienoic (ETA)/ arachidonic(AA) acids and AA/docosahexaenoic (DHA) acids. In animals with EFA deficiency steatosis can be modified by EFA.

The *aim* of this study was to investigate if lipid composition was different in the livers in CF compared to controls.

Methods: Liver biopsy was part of investigation of increased serum transaminases in 11 patients with CF and in 11 patients with psoriasis for control after treatment with metotrexate. Six CF patients had steatosis, 3 fibrosis and 2 cirrhosis and all psoriasis patients had normal liver morphology. A part of the biopsy was frozen in -70° until analysis. Lipid fractions were separated on HPLC after homogenization and Folch extraction and fatty acids (FA) were analysed on capillary GLC.

Results :The phospholipid (PL) pattern showed significantly lower phosphatidylcholine (PC) in CF both as mg/g ww, mg/g protein and as percentage distribution of PL. Total liver FA showed significant increase of monounsaturated FA and significantly lower DHA in CF ($p=0.01$) and increased AA/DHA ratio ($p=0.01$). Serum AA/DHA ratio correlated significantly with that in PL PC ($r=0.86$, $p=0.01$). The AA/DHA and the ETA/AA ratios were significantly increased in most PLs. Altogether the differences to livers with normal morphology were most pronounced in PC and phosphatidylethanolamine and least in sphingomyelins and cardiolipin.

Conclusion: PL pattern and the FA composition showed significant changes in livers from CF patients compared to livers with normal morphology.